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TITLE: LOCK DEVICE FOR BICYCLE

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INVENTOR-INFORMATION:

NAME	COUNTRY
KASUGA, NOBUTOSHI	N/A
NISHIMURA, RITSUO	N/A
SATO, SUSUMU	N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
BRIDGESTONE CYCLE CO	N/A

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ABSTRACT:

PROBLEM TO BE SOLVED: To provide a lock device for a bicycle lockable and unlockable by remote operation of high quality feel allowing

manual

locking/unlocking action by one-hand operation, and securing safety even when the operation is stopped at an incompletely operated position to provided an excellent feel of modesty.

SOLUTION: This lock device for a bicycle is composed so that a lock drive part 5 is driven by a drive signal of a signal receiving means 22 receiving a code signal from a signal transmitting means 24 to actuate key mechanism parts 4, 3 for locking and unlocking the key mechanism parts 4, 3 by normal rotation and reverse rotation of the key drive part 5, which is composed so that locking/unlocking action can also be conducted by manual operation. A holding mechanism 12 for holding a key cylinder 13 at a locking and an unlocking position disposed on both sides of a neutral point is provided, so locking/unlocking operation can also be conducted by manual operation by one hand only in this lock device for a bicycle lockable and unlockable by keyless remote operation while keeping a high quality feel, thereby locking/ unlocking operation can be conducted easily for convenience even when one hand cannot be used because of bags after shopping.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is operated by remote operation, and when an authorization code is in agreement, it relates to the lock equipment for bicycles suitable for the theft prevention by which lock actuation is made.

[0002]

[Description of the Prior Art] In the bicycle, many various lock equipments are proposed and used from the former for theft prevention. Horseshoe-shaped **** locked by invading between the spokes of a wheel as most general thing is used abundantly. Usually, this type of thing locks the horseshoe-shaped obex manually, holds a lock location, unlocks the obex energized by rotation of a cylinder key in the unlocking direction, and has some which were indicated by JP,8-74458,A (the patent No. 2759256 official report) and JP,8-312221,A. And in recent years, the lock equipment which used the combination of a transmitter-receiver also in the field of two-wheel barrows, such as a bicycle, by development of an electronic technique has also been proposed. As those examples, there are some which were indicated by JP,8-260784,A and JP,10-196188,A. Only when the lightwave signal containing the identification code which the lock locked by hand control could be unlocked by the usual manual key, and also was beforehand set up corresponding to the lock is received from a dispatch means, the former thing is constituted so that a unlocking control signal may be generated in the lock which is a receiving means side and unlocking actuation may be made.

[0003] By moreover, transmission of the electric wave which contains the ID code from a transmitting means side for what the latter thing was prevented by pushing of the longitudinal locking bar according [rotation of one / at least / wheel of order both wheels] to hand control, and was locked Only when said ID code from a transmitting means side is identified and collating coincidence is carried out in the lock side which is a receiving means side, an electromagnetic discharge bulb is operated, and it constitutes so that unlocking may be made by restoration of said longitudinal locking bar.

[0004]

[Problem(s) to be Solved by the Invention] However, in the conventional remote-operation-type lock equipment for bicycles constituted in this way, anything is locked manually, and it is constituted so that remote operation using light or an electric wave may perform only unlocking. Because, since locking will become impossible if the wheel has stopped in the location which contacts a spoke at the time of locking actuation of the keylock sections, such as obex which invades between the spokes of a wheel etc. and usually prevents rotation of a wheel, in locking by remote operation, locking is widely performed by hand control. Therefore, even if transit of a bicycle was made without having performed unlocking of a lock by remote operation, and soiling a hand etc. with much trouble, after transit termination, it had to have a finger, the keylock sections, such as obex which became dirty with mud, had to be operated again, and it was insanitary.

[0005] Since it is such, this applicant solves many technical problems in said conventional remote-operation-type lock equipment for bicycles. The lock equipments for bicycles (Japanese Patent

Application No. No. 79136 [ten to], Japanese Patent Application No. No. 313223 [ten to], etc.) which made it possible to carry out only by remote operation in any [of locking actuation and unlocking actuation] case are proposed. Furthermore, this applicant proposed the lock equipment which enables it to perform locking and unlocking manually also at the time of failure of the lack of a cell in remote-operation-type the lock for bicycles which becomes these proposals, or an electrical circuit (Japanese-Patent-Application-No. No. 369489 [ten to] official report). However, since what becomes this proposal is performed by the spring with which the keylock sections, such as obex, were still energized in the unlocking direction at the time of unlocking, Unlocking was made with sufficient vigor and the impact was great, and when there is a loud sound, and a high-class feeling of quality is a little missing and also manual operation was carried out after remote operation by key loess, it had actuation top sense of incongruity in the next key loess actuation, such as requiring actuation of key loess actuation 2 batch, (also in case of the reverse). Then, manual operation when this applicant is still more nearly emergency was also possible, and the impact proposed the lock for bicycles (Japanese Patent Application No. No. 120961 [11 to]) which enabled locking and unlocking by little high remote operation of a feeling of quality also on the occasion of unlocking. However, since it was energized with the spring in the unlocking direction, at the time of manual unlocking, the impact was still great, and also the load of the mechanical component at the time of locking of the keylock sections, such as obex, was large.

[0006] Since it was such, this applicant improved said proposal invention further, abolished the impact also on the occasion of unlocking the load of the mechanical component at the time of locking is small, and according to the manual operation of an in [an emergency], and proposed the lock equipment for bicycles which enabled locking and unlocking by high remote operation of a feeling of quality (Japanese Patent Application No. No. 176188 [11 to]). However, at the time of manual operation, since the thing of this proposal also needed to operate the obex manually under the actuation in a key cylinder, when both-hands actuation could not be escaped and one hand was closed by the load, it was inconvenient, and also the feeling of moderation in a locking location and a unlocking location tended to be insufficient, and the situation which stops manual operation in the halfway location of the obex tended to be produced.

[0007] Then, said proposal invention is improved, while enabling manual lock actuation by one hand actuation of the lock equipment which enabled locking and unlocking by high remote operation of a feeling of quality, even when actuation is stopped in a halfway location, safety is secured, and this invention aims at offering the lock equipment for bicycles excellent in a feeling of moderation.

[0008]

[Means for Solving the Problem] For this reason, it has a receiving means to generate the signal for driving a lock mechanical component with predetermined power, and operating the keylock section only when this invention is in agreement with what the authorization code set up in response to the code signal from a transmitting means. It is lock equipment for bicycles constituted so that the keylock section might be locked and unlocked by normal rotation and an inversion of said lock mechanical component. Said keylock section consists of sliders which it is from-cartridge-supported movable at predetermined within the limits, and are driven by said lock mechanical component in the obex and this obex. In the lock equipment for bicycles with which said slider was wide opened from the lock mechanical component by the cam arranged considering the key cylinder as the center of oscillation, and lock actuation was constituted possible also manually It is characterized by preparing the maintenance device in which said key cylinder is held in locking and the unlocking location which were able to be distributed to the both sides of a neutral point. Moreover, this invention is characterized by establishing the inverse rotation prevention device interlocked with rotation of the key cylinder constituted so that migration to the lock actuation direction and opposite direction of said obex might be prevented. Moreover, it is characterized by being constituted so that maintenance of the unlocking location by said maintenance device may be interlocked with migration in the unlocking location of the obex and this invention may be opened wide. Moreover, this invention is characterized by establishing the detent stopped to said obex in a locking location and a unlocking location, and makes these the means for technical-problem solution.

[0009]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained based on a drawing. Drawing 1 - drawing 10 are what shows the gestalt of 1 operation of the lock equipment for bicycles of this invention. The general drawing of the lock body in the locking condition which drawing 1 removes the transceiver means and upper case in the lock equipment for bicycles of this invention, and shows the interior, The external view of the lock body which drawing 2 shows the control unit of a key cylinder, the sectional view of a driving mechanism with drawing 3 from the lock mechanical component in a lock body to [in sectional view] the keylock section, The internal explanatory view of the lock body in a unlocking condition and drawing 5 drawing 4 R> 4 The internal explanatory view of the lock body in the middle of key loess locking, It is the control-block block diagram in which the internal explanatory view of the lock body in the middle of locking according [drawing 7] to hand control, the internal explanatory view of the lock body in the middle of unlocking according [drawing 8] to hand control, and drawing 9 show the explanatory view of the key cylinder control section of operation, and drawing 10 shows a transmitting means and a receiving means according [drawing 6] to the internal explanatory view of the lock body in the middle of key loess unlocking.

[0010] It has a receiving means to generate the signal for driving a lock mechanical component with predetermined power, and operating the keylock section only when this invention is in agreement with what the authorization code set up in response to the code signal from a transmitting means. It is lock equipment for bicycles constituted so that the keylock section might be locked and unlocked by normal rotation and an inversion of said lock mechanical component. Said keylock section consists of sliders which it is from-cartridge-supported movable at predetermined within the limits, and are driven by said lock mechanical component in the obex and this obex. In the lock equipment for bicycles with which said slider was wide opened from the lock mechanical component by the cam arranged considering the key cylinder as the center of oscillation, and lock actuation was constituted possible also manually It is characterized by preparing the maintenance device in which said key cylinder is held in locking and the unlocking location which were able to be distributed to the both sides of a neutral point. As shown in drawing 1 R> 1, with the gestalt of this operation, a receiving means is established in the control section 22 arranged with the power source 23 of a cell etc. in another object case 21 which is a dc-battery case, and is arranged in the lock body case near the lock body.

[0011] A lock body is what is installed in the back fork which attends the bicycle rear wheel of an illustration abbreviation. The horseshoe-shaped obex 3 locked by invading between rear wheel spokes etc. and preventing rotation of a wheel, The keylock section by which it was equipped with the slider 4 which it is from-cartridge-supported movable at predetermined within the limits, and is driven by said lock mechanical component in this obex 3, The lock mechanical components 5 (electric motor) and 6 (worm gearing) which operate this keylock section through the speed reducing gear trains 6, 7, and 8 which constitute a driving mechanism are contained. Locking manual operation button 24a for sending said code signal and unlocking manual operation button 24b are installed in the key loess remote control 24 which, on the other hand, transmits the code signal which has a predetermined authorization code to the receiving means in said control section 22. Moreover, the key 25 for unlocking said obex 3 in a lock body manually is also attached to this key loess remote control 24.

[0012] Each following configuration members are arranged in the interior of the lock body formed in the bottom case 2 (drawing 1 and drawing 3) of a steel plate press cast etc., and the upper cases 1, such as a resin cast. Only when in agreement with what the authorization code set up in response to the code signal from a transmitting means (24), with the power of a power source 23 In the electric motor 5 which constitutes the lock mechanical component in which normal rotation and an inversion are possible, and the bottom case 2, by 9d of pivots The gear holder 9 (this gear holder 9 is energized so that the obex drive gear 8 may gearing shaping section 4a [of the slider 4 which is the keylock section], and always be geared by energization spring 9c.) holding said electric motor 5 supported to revolve free [rocking] etc. -- it is installed.

[0013] The reduction gears 7 and 8 which mesh further to the worm gearing 6 formed in the gear holder 9 at the output shaft of an electric motor 5, and serve as a driving mechanism are held referring to

drawing 3 . The moderation spur gear 7 consists of the worm gear and this worm gear which gear with a worm gearing 6, and a spur gear of the minor diameter of one, and the moderation spur gear 8 which meshes with the spur gear of this minor diameter consists of the spur gears of a major diameter, these spur gears, and the obex drive gears 8 of one which gear with the spur gear of the minor diameter in said moderation spur gear 7. As shown in drawing 1 , the slider 4 which engraved on the periphery section gearing shaping section 4a which drives by said obex drive gear 8, constitutes the keylock section, and gears with this gear 8 at the time of normal rotation of said obex drive gear 8 and an inversion, and the obex 3 which similarly constituted the keylock section and from-cartridge-supported said slider 4 movable in predetermined within the limits are installed. Although illustration is omitted, the height of some trapezoidal shape (the example of drawing 1 two) in which the stopper discharge sections 4d and 4e in which it has the ups-and-downs cross section of the gestalt which adjusts the slider 4 with which gearing shaping section 4a engraved on the periphery section gears on the obex drive gear 8 inside the obex 3 of a portal cross section, and the guide function at the time of migration of the slider 4 in the obex 3 also has it were formed is formed. In order to make a slider 4 from-cartridge-support movable at predetermined within the limits within the obex 3, the center-valve-position maintenance springs 4b and 4c are arranged, respectively between the regulation walls of the obex 3 of the both sides (the locking direction and the unlocking direction) of 4g of neutral pieces made to stand up from near the edge of a slider 4 (in the direction of drawing this side).

[0014] While constituting the maintenance in the locking location (condition of drawing 1) and unlocking location (condition of drawing 4) of said obex 3 so that it may be made by the stopper 14, discharge of maintenance of these locking location by this stopper 14 and a unlocking location is constituted so that it may be made by the slider 4 (stopper discharge sections 4d and 4e). Moreover, the detection means of microswitch 20 grade which consists of a rotary switch which detects this with maintenance actuation of the obex 3 by said stopper 14 is installed, and it is used as a location detection means of locking of the obex, and unlocking. Although a stopper 14 detects soon the collapse to the stop sections 3b and 3c of the obex 3 like the gestalt of this operation as a detection means, it is also possible to constitute from others, a photo coupler, or an analog type potentiometer. In addition, said stopper 14 is energized at the side which falls by energization spring 14a with which the end section was equipped in the stop sections 3b and 3c for locking and unlocking station keeping in the obex 3.

[0015] On the other hand in the location where said electric motor 5, reduction gears 6, 7, and 8, and opposite side counter The key cylinder 13 which operates the push lever 11 which was supported to revolve by the case and installed free [rocking] in order to make operational manually the obex 3 in a locking condition or a unlocking condition is arranged. By inserting said key 25 (drawing 1) manually from the outside of the upper case 1, resisting the stability of energization spring 9c (drawing 1), and carrying out rotation actuation of the key cylinder 13 in the locking direction or the unlocking direction, as shown in drawing 2 Make the push lever 11 rock, make the contact section at the tip upper-**, and discharge section 9b (refer to drawing 3 (A)) of the point of said gear holder 9 is made to upper-**. It is constituted so that the gear holder 9 may be made to rock clockwise and the obex drive gear 8 which is a reduction gear may be wide opened from the slider 4 in the keylock section with hand control. The inversion prevention device 12 interlocked with rotation of the key cylinder 3 which consisted of this inventions so that it is characterized by to prepare the maintenance device in_ which said key cylinder 13 is held in locking location 13c and unlocking location 13b which were able to be distributed to the both sides of the neutral point used as key loess actuated-valve-position 13a as shown in drawing 2 and migration to the lock actuation direction and the opposite direction of said obex 3 may prevent is established. Moreover, as shown in drawing 2 R> 2, lever 3a exposed to the exterior of the upper case 1 is attached to the obex 3 so that the obex 3 can be easily moved to a locking location and a unlocking location with a finger at the time of disconnection of a lock mechanical component and the keylock section from a reduction gear.

[0016] So that drawing 9 may be the explanatory view of the key cylinder control section of operation and I may be understood by this When it sees about the push lever 11 for canceling said gear holder 9 of engagement with a slider 4, even if it makes a clockwise unlocking actuated valve position rotate the key

cylinder 13 from the condition of (a) which is a neutral point (condition of (c)) If it sees about the stopper 14 for making the push lever 11 rock in the discharge direction (counterclockwise rotation), and canceling the obex 3 of the lock maintenance in a locking location and a unlocking location even if it rotates a counterclockwise locking actuated valve position (condition of (e)) Even if it makes a clockwise unlocking actuated valve position rotate the key cylinder 13 from the condition of (b) which is a neutral point (condition of (d)), and it rotates a counterclockwise locking actuated valve position (condition of (f)), it is constituted so that a stopper 14 can be made to rock in the discharge direction (clockwise rotation). 15 is the locking cam which protruded on the key cylinder 13, and 16 is a unlocking cam.

[0017] Drawing 10 is the block block diagram showing a transmitting means and a receiving means, and key loess remote control 24 the very thing has locking manual operation button 24a and unlocking manual operation button 24b (drawing 1) which constitute the transmitting switch exposed to the frame of a predetermined configuration outside from small [included in a pocket etc. / of magnitude] in the transmitting means by the side of the key loess remote control 24. The interior of the key loess remote control 24 is equipped with the authorization code storage section and the modulation circuit where the certified value of LED which displays a cell residue, a send state, or a lock condition (location of the obex), the transmission-control section which consists of a CPU for transmission controls, a transmitting switch, and the code signal of a proper is memorized, the transmitting section, the power-source cell for transmission, etc. In addition, although locking manual operation button 24a and unlocking manual operation button 24b are prepared in the key loess remote control 24 which is a transmitting means side in this invention An obex location is constituted from the lock side which is a receiving means side by the obex location detection means possible [detection]. Based on the detection result, the drive approach of the lock mechanical component of next time, such as an electric motor, is chosen automatically, and it can also constitute so that only one transmitting carbon button which does not need to judge the driving direction of a lock mechanical component by the transmitting side may be installed.

[0018] If locking manual operation button 24a or unlocking manual operation button 24b is pushed, a transmitting switch is connected and a sending signal is sent out to the transmission-control section by the transmitting means side, in the transmission-control section, the signal corresponding to the authorization code of the proper memorized in the authorization code storage section will be sent out to a modulation circuit, and the signal modulated in the modulation circuit will be sent in the air as a specific code signal from the transmitting section. In the control section 22 of the receiving means which is a lock body side, if the command from the reception-control section receives the authorization code signal from the transmitting means side corresponding to the authorization code of a proper in a receive section under an injection of a current supply switch under predetermined conditions (for example, detection of initiation of transit and an injection of a manual switch), it will get over in a demodulator circuit and will input as an authorization code signal of the proper to the reception-control section.

[0019] When the authorization code by the side of the receiving means memorized in the authorization code storage section and the authorization code in the code signal from said received transmitting means side are in agreement in the reception-control section It is based on the information on the lock location memorized by the locking unlocking condition storage section based on the detection result by said obex location detection means. The driving signal for driving the electric motor 5 which is the lock mechanical component which operates the keylock section which consists of said obex 3 and sliders 4 will be sent out from locking / unlocking drive section. Voice etc. reports that send out an actuation information signal to the alarm information section from the reception-control section, and actuation of locking or unlocking is performed at this time, and also When the detecting signal from the detection means 20 is not inputted after progress of the predetermined time of initiation of the lock mechanical component at the time of locking of operation It can also constitute so that the obex 3 may emit an alarm signal in said alarm information section as what failure of whether the detection means of microswitch 20 grade broke down in contact with the spoke of a wheel or the motion of SUTTOPA 14 deteriorated produced. Said alarm is applicable also to the failure at the time of unlocking actuation.

[0020] If the obex 3 arrives at a locking location through the obex drive gear 8 and a slider 4 by the

normal rotation drive of said electric motor 5, it falls in engagement section 3c which has a stopper 14 in the locking location in the obex 3, and the detection means 20 detects ***** and sends out a stop signal to the electric motor 5 which is a lock mechanical component. Although the detailed explanation to illustrate is not carried out, in addition, by making run state detection equipments (what detects the run state of a bicycle as a pulse signal with the reed switch which installed the magnet installed in the wheel in the car-body side) carry Even if transmission of the code signal by emergency malfunction from the key loess remote control 24 is made, when transit of a bicycle is detected, it can also constitute so that a driving signal may not be sent out to a lock mechanical component.

[0021] Thus, actuation of the lock equipment for bicycles of constituted this invention is explained. As shown in <key loess locking> drawing 4, where the lock was in the unlocking condition, and the obex 3 was drawn in the lock body and contained When the control section has memorized the unlocking condition with the signal from the microswitch 20 which consists of rotary switches etc., Locking manual operation button 24a in the key loess remote control 24 is pushed, and the code signal corresponding to the authorization code of a proper is sent. When said code signal is in agreement with the authorization code to which the receiving means side was set with the receiving means within a lock body, a control section 22 directs locking and sends out the driving signal of normal rotation to an electric motor 5.

[0022] The worm gear 7 and the obex drive gear 8 which gear to a worm gearing 6 and this worm gearing 6, and constitute a reduction gear by the normal rotation drive of an electric motor 5 rotate normally, and the slider 4 with which gearing shaping section 4a was engraved on the periphery section rotates counterclockwise. A stopper 14 is extruded from stop section 3b which resists the stability of energization spring 14a and is in the unlocking location of the obex 3 according to the cam operation by 4d of stopper discharge sections which 4g of neutral pieces stood up and installed near the edge of a slider 4 by this moved in the interior of the obex 3, compressing center-valve-position maintenance spring 4b arranged in the locking side, and were formed in the slider 4. The obex 3 is moved in the locking direction, 4g of neutral pieces in a slider 4 compressing center-valve-position maintenance spring 4b after that. This condition is shown in drawing 5. by the microswitch 20 by which the stopper 14 fell in stop section 3c in the locking location of the obex 3, and was constituted from a rotary switch etc. just before the locking location generating a locking position signal, a control section 22 directs locking termination, and an electric motor 5 is stopped (condition of drawing 1), simultaneously a locking condition is memorized.

[0023] From the locking condition of <key loess unlocking> drawing 1, it is made to be the same as that of the time of key loess locking mentioned above. In the control section 22 of a receiving means which received the code signal corresponding to the authorization code of the proper transmitted by the depression of unlocking manual operation button 24b in the key loess remote control 24 When said receiving code signal is in agreement with the authorization code to which the receiving means side was set, unlocking is directed based on storage of the locking condition memorized previously, an inversion driving signal is sent out to a lock mechanical component, and an electric motor 5 is reversed. A slider 4 begins rotation clockwise with the rotation driving force of the obex drive gear 8 told through the reduction gear by this. As it moves in the unlocking direction in the interior of the obex 3, 4g of neutral pieces in a slider 4 compressing center-valve-position maintenance spring 4c arranged in the unlocking direction side and is shown in drawing 6 After resisting the stability of energization spring 14a and extruding a stopper 14 from stop section 3c of the locking location of the obex 3 according to the cam operation by stopper discharge section 4e formed in the slider 4, The obex 3 is moved in the unlocking direction, 4g of neutral pieces in a slider 4 compressing center-valve-position maintenance spring 4c. This condition is drawing 6. furthermore, by the microswitch 20 which the stopper 14 fell in stop section 3b in the unlocking location of the obex 3 just before the unlocking location by continuing an inversion, and consisted of rotary switches etc. generating a unlocking position signal, a control section 22 directs unlocking termination, and an electric motor 5 stops an electric motor 5 (condition of drawing 4), simultaneously memorizes a unlocking condition.

[0024] It sets in the condition in the middle of the condition of 4, and locking of drawing 5. When

[emergency] a power-source cell piece, failure of a lock mechanical component, etc. arise, as shown in drawing 7 When a key 25 (drawing 1) is inserted in the key cylinder 13 and it rotates in the counterclockwise direction (drawing 2) of locking location 13c like an arrow head like a common circle lock, by the locking cam 15 of the key cylinder 13 While making the push lever 11 rock a stopper 14 counterclockwise clockwise, making the gear holder 9 rock clockwise and canceling of a slider 4, the lock of the obex 3 is made to cancel. While migration of a slider 4 becomes free by this, in locking location 13c, the key cylinder 13 stops and is held. At this time, the end section of the inversion prevention anchor escapement 12 fixed to the key cylinder 13 is stopped by gearing shaping section 4a of a slider 4, and the migration to a slider 4, i.e., the unlocking direction of the obex 3, is prevented.

[0025] Therefore, in this condition, lever 3a (drawing 2) in the obex 3 is gathered with the same finger which operated the key cylinder 13, and like the arrow head of drawing 7 , it can be made to move in the locking direction and results in the locking condition of drawing 1 . In addition, the notch spring 10 which constituted the detent just before the locking location and was fixed to the gear holder 9 grade is wide opened from the peripheral surface of the obex 3, and runs with a moderate feeling of moderation. By returning said key cylinder 13 to clockwise neutral point 13a in this locking condition, it falls in stop section 3c in the locking location which a stopper 14 also returns counterclockwise according to the stability of energization spring 14a, and kicks it to the obex 3, a locking location is detected by the detection means 20, and a locking condition is memorized. In addition, a key 25 is inserted in the key cylinder 13, and this is rotated, and after locking or unlocking operating it, it consists of lock equipment in this invention so that a key 25 can be sampled from the key cylinder 13.

[0026] When [emergency] a power-source cell piece, failure of a lock mechanical component, etc. arise in a condition in the middle of unlocking of the locking condition of unlocking > drawing 1 , or drawing 6 with < hand control, as shown in drawing 8 R> 8, like the case of locking with said hand control You insert a key 25 in the key cylinder 13, and the direction of unlocking location 13b (drawing 2) makes it rotate clockwise. By the unlocking cam 16 of the key cylinder 13 While making the push lever 11 rock a stopper 14 counterclockwise clockwise, making the gear holder 9 rock clockwise and canceling of a slider 4, the lock of the obex 3 is made to cancel. While migration of a slider 4 becomes free by this, in unlocking location 13b, the key cylinder 13 stops and is held. At this time, the other end of the inversion prevention anchor escapement 12 fixed to the key cylinder 13 is stopped by gearing shaping section 4a of a slider 4, and the migration to a slider 4, i.e., the locking direction of the obex 3, is prevented. Since the obex 3 does not rotate in the locking direction by this even if unlocking actuation is imperfect, a sudden interference with a wheel can be prevented.

[0027] Therefore, in this condition, lever 3a (drawing 2) in the obex 3 is gathered with the same finger which operated the key cylinder 13, and like the arrow head of drawing 8 , it can be made to move in the unlocking direction and results in the locking condition of drawing 4 . The notch spring 10 which constituted the detent just before the unlocking location and was fixed to the gear holder 9 grade is wide opened from the peripheral surface of the obex 3, falls in stop section 3c, and runs with a moderate feeling of moderation. At this time, 4f of points of a slider 4 can contact the retracting lever 17 fixed to the key cylinder 13 in the location in front of the completion of unlocking, and the key cylinder 13 can be returned to key loess actuated-valve-position 13a which is a neutral point. It falls in stop section 3b in the unlocking location which a stopper 14 also returns counterclockwise according to the stability of energization spring 14a, and kicks it to the obex 3 by this, a unlocking location is detected by the detection means 20, and a unlocking condition is memorized. After carrying out unlocking actuation, a key 25 is sampled from the key cylinder 13.

[0028] In addition, even when locking or unlocking is manually performed by the cause of a cell piece etc., detection of the lock location by the detection means after the lock actuation by hand control can be memorized by existence of the rechargeable battery in a control circuit etc.

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CLAIMS

[Claim(s)]

[Claim 1] It has a receiving means to generate the signal for driving a lock mechanical component with predetermined power, and operating the keylock section only when in agreement with what the authorization code set up in response to the code signal from a transmitting means. It is lock equipment for bicycles constituted so that the keylock section might be locked and unlocked by normal rotation and an inversion of said lock mechanical component. Said keylock section consists of sliders which it is from-cartridge-supported movable at predetermined within the limits, and are driven by said lock mechanical component in the obex and this obex. In the lock equipment for bicycles with which said slider was wide opened from the lock mechanical component by the cam arranged considering the key cylinder as the center of oscillation, and lock actuation was constituted possible also manually Lock equipment for bicycles characterized by preparing the maintenance device in which said key cylinder is held in locking and the unlocking location which were able to be distributed to the both sides of a neutral point.

[Claim 2] Lock equipment for bicycles according to claim 1 characterized by establishing the inversion prevention device interlocked with rotation of the key cylinder constituted so that migration to the lock actuation direction and opposite direction of said obex might be prevented.

[Claim 3] Maintenance of the unlocking location by said maintenance device is lock equipment for bicycles according to claim 1 or 2 characterized by being constituted so that migration in the unlocking location of the obex may be interlocked with and it may be opened wide.

[Claim 4] Lock equipment for bicycles according to claim 1 to 3 characterized by establishing the detent stopped to said obex in a locking location and a unlocking location.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the general drawing of the lock body in the locking condition which the gestalt of 1 operation of the lock equipment for bicycles of this invention is shown, and a transceiver means and an upper case are removed and shows the interior.

[Drawing 2] It is the external view of the lock body in which the control unit of a **** key cylinder is shown.

[Drawing 3] It is the sectional view of a driving mechanism from the lock mechanical component in a **** body to the keylock section.

[Drawing 4] It is the internal explanatory view of the lock body in a **** unlocking condition.

[Drawing 5] It is the internal explanatory view of the lock body in the middle of **** key loess locking.

[Drawing 6] It is the internal explanatory view of the lock body in the middle of **** key loess unlocking.

[Drawing 7] It is the internal explanatory view of the lock body in the middle of locking by **** hand control.

[Drawing 8] It is the internal explanatory view of the lock body in the middle of unlocking by **** hand control.

[Drawing 9] It is the explanatory view of the **** key cylinder control section of operation.

[Drawing 10] It is the control-block block diagram showing a **** transmitting means and a receiving means.

[Description of Notations]

- 1 Upper Case
- 2 Bottom Case
- 3 Obex (Keylock Section)
 - 3a Obex lever
 - 3b Stop section
 - 3c Stop section
- 4 Slider
 - 4a Gearing shaping section
 - 4b, 4c Center-valve-position maintenance spring
 - 4d, 4e Stopper discharge section
 - 4f Point
 - 4g Neutral piece
- 5 Electric Motor (Lock Mechanical Component)
- 6 Worm Gearing
- 7 Spur Gear (Reduction Gear)
- 8 Obex Drive Gear (Reduction Gear)
- 9 Gear Holder
- 9a The direction energization section of the obex

9b Discharge section
9c Energization spring
9d Pivot
10 Notch Spring
11 Push Lever
12 Inversion Prevention Anchor Escapement
13 Key Cylinder
13a Key loess actuated valve position
13b Manual operation discharge location
13c Manual operation locking location
14 Stopper
14a Energization spring
15 Locking Cam
16 Unlocking Cam
17 Retracting Lever
20 Microswitch (Detection Means)
21 Dc-battery Case (Another Object Case)
22 Control Section (Receiving Means)
23 Power Source
24 Key Loess Remote Control (Transmitting Means)
24a Locking manual operation button
24b Unlocking manual operation button
25 Key

[Translation done.]

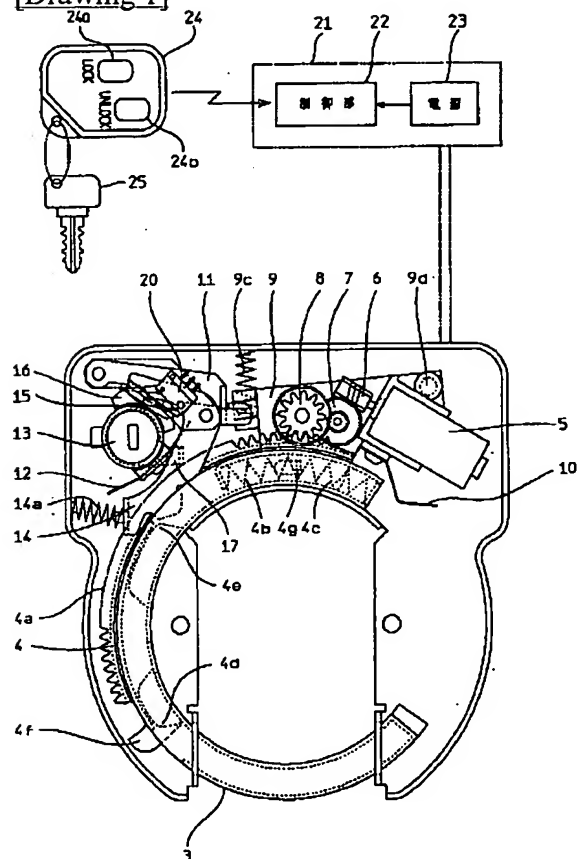
* NOTICES *

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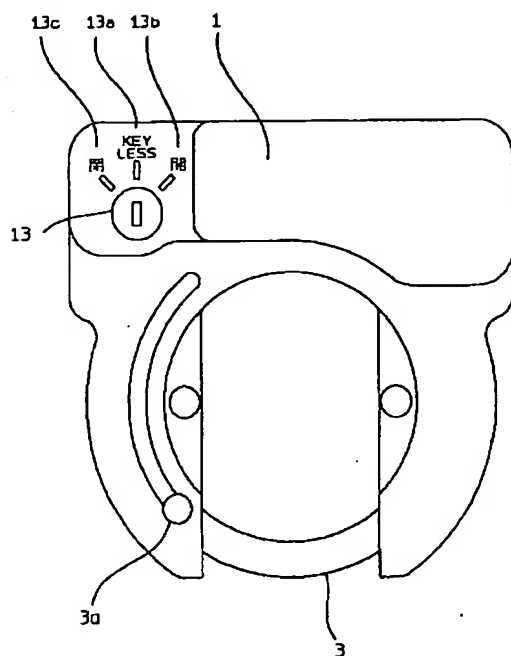
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

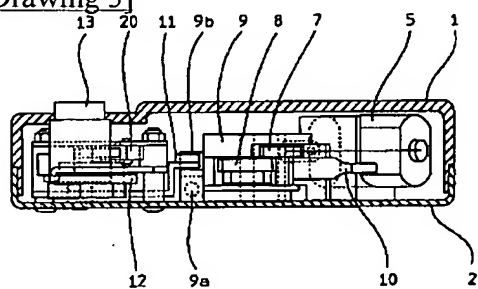
[Drawing 1]



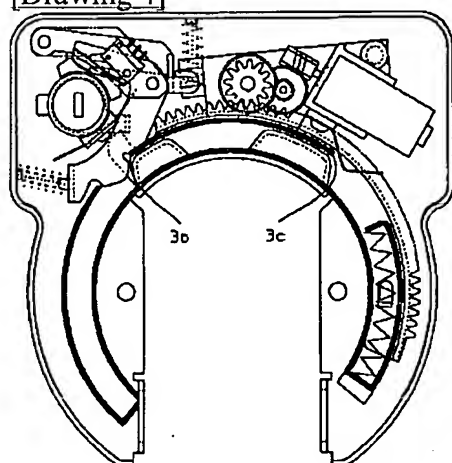
[Drawing 2]



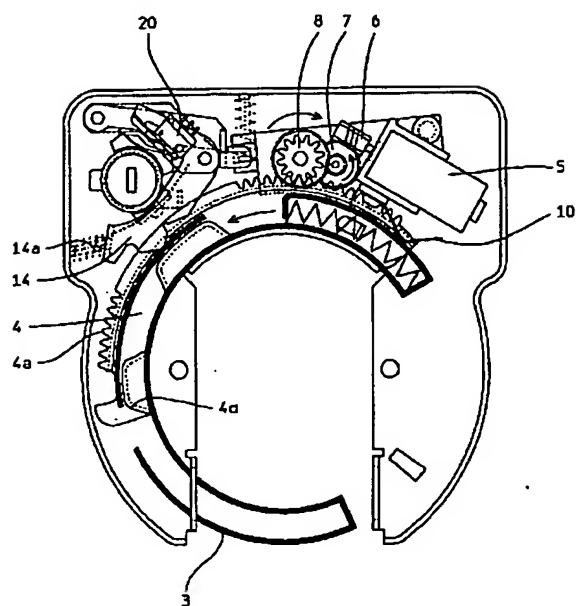
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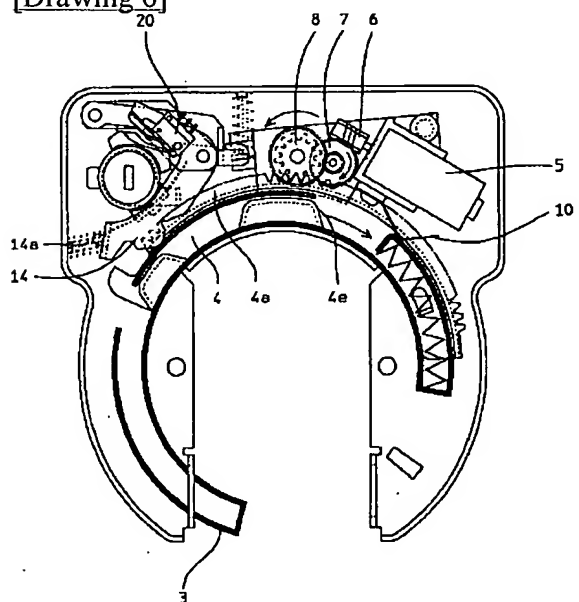
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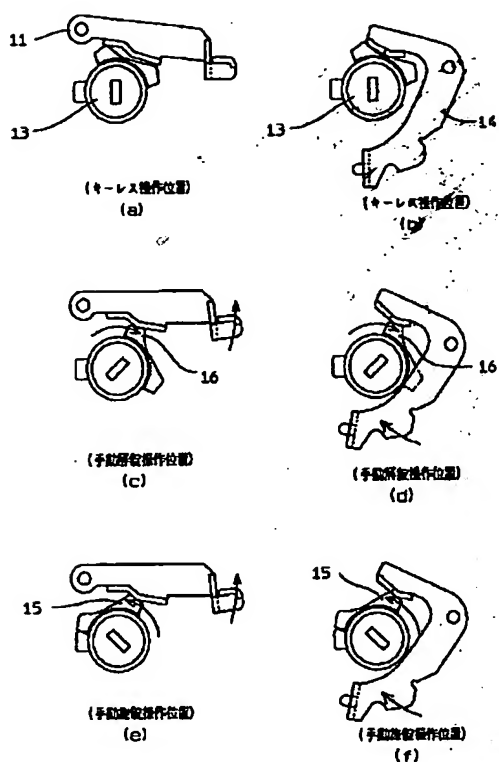
[Drawing 5]



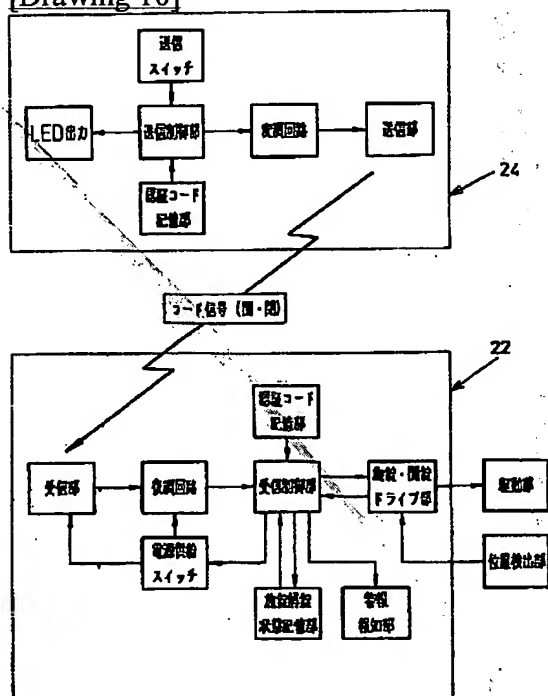
[Drawing 6]



[Drawing 7]



[Drawing 10]



[Translation done.]

